

ABSTRACT OF THE INVENTION

2 A pressure-balanced battery for powering downhole-drilling components and a
3 downhole telemetry network in a subterranean environment includes a battery and a housing
4 enclosing and sealing a volume containing the battery. At least a portion of the housing is
5 expandable and contractible to enable pressure encountered downhole to balance pressure
6 internal to the housing. In this way, the thermal range of a battery's operation may be
7 increased to function in a downhole environment. In selected embodiments, the housing is in
8 operable communication with downhole fluids to transfer pressure to the battery. In selected
9 embodiments, the battery is integrated into the annular structure of an existing downhole
10 tool. In other embodiments, the battery may be integrated into a downhole tool specifically
11 dedicated for use as a battery.